LA4 PRESET LIBRARY **3.0**

LA8 PRESET LIBRARY **3.0**

SAFETY INSTRUCTIONS

1. **Read this document.**

2. **Never incorporate equipment or accessories not approved by L-ACOUSTICS®.**

3. **Follow all SAFETY INSTRUCTIONS as well as DANGER and OBLIGATION warnings.**

4. **Read all the related PRODUCT INFORMATION documents before exploiting a system.**
   The **product information** document is included in the shipping carton of the related system component, or can be downloaded from the L-ACOUSTICS® website.

5. **Read all the related USER MANUAL documents before exploiting a system.**
   All the **user manuals** are downloadable from the L-ACOUSTICS® website.

6. **Beware of sound levels.**
   Preset change can force loudspeaker systems to produce very high sound pressure levels (SPL) which can instantaneously lead to permanent hearing damage to performers, production crew and audience members. Hearing damage can also occur with prolonged exposure to sound: 8 h at 90 dB(A), 30 min at 110 dB(A), less than 4 min at 130 dB(A).

SYMBOLS

The following symbols are used in this document:

DANGER
The DANGER symbol indicates a potential risk of harm to an individual or damage to the product.
This symbol can also notify the user about instructions that must be strictly followed to ensure safe installation or operation of the product.

OBLIGATION
This symbol notifies the user about instructions that must be strictly followed to ensure proper installation or operation of the product.

INFORMATION
This symbol notifies the user about complementary information or optional instructions.

WELCOME TO L-ACOUSTICS®

Thank you for choosing L-ACOUSTICS®.

This document gathers essential information about the factory presets dedicated to the operation of L-ACOUSTICS® loudspeaker enclosures with L-ACOUSTICS® amplified controllers. Carefully read this document in order to become familiar with the preset libraries.

As part of a continuous evolution of techniques and standards, L-ACOUSTICS® reserves the right to change the specifications of its products and the content of its documents without prior notice.

Please check the L-ACOUSTICS® web site on a regular basis to download latest updates for documents and software: www.l-acoustics.com.

CONTENTS

1 INTRODUCTION

The L-ACOUSTICS® amplified controllers are delivered with onboard firmware and preset library.

A preset of the onboard library can be loaded from the front panel of the amplified controller, or from the **LA NETWORK MANAGER** software application, a management tool dedicated to the remote control and monitoring of a network of L-ACOUSTICS® amplified controllers.

LA NETWORK MANAGER must be used for updating firmware on L-ACOUSTICS® amplified controllers. An up-to-date preset library is automatically installed with the firmware. Check the L-ACOUSTICS® website for the latest version of software, firmware and libraries.

Operating L-ACOUSTICS® amplified controllers
Refer to the **LA4, LA8** and **LA-RAK user manuals**.

Installing LA NETWORK MANAGER software
Download the **LA AMPLIFIED CONTROLLERS release pack** and refer to the **README file.**

Updating FIRMWARE on an L-ACOUSTICS® amplified controller
Refer to the **LA NETWORK MANAGER tutorial**, accessible from the HELP menu of the software.

2 PRESET DESIGN

2.1 Gain structure

The gains of all L-ACOUSTICS® factory presets are calibrated with a reference pink noise signal, representative of most demanding musical programs. The reference input level is 0 dBu with analog audio source or -22 dBFS with digital audio source. When feeding L-ACOUSTICS® amplified controllers at this input level, L-ACOUSTICS® loudspeaker enclosures provide the sound engineer with 8 dB of headroom, except for the ones of smaller format - MTD108a, 5XT, 8XT, KIVA, SB15m and KILO - calibrated for 4 dB of headroom.

This gain structure facilitates managing the power resources of L-ACOUSTICS® systems when using various types of enclosures of the same format. With default output gain settings (0dB), all enclosures will reach their limits for the same input signal level. The only gain adjustment to apply is -4 dB for MTD108a, 5XT, 8XT, KIVA, SB15m or KILO enclosures that would be used along with L-ACOUSTICS® loudspeaker enclosures of bigger format.

2.2 Electro-acoustic coupling

Each recommended loudspeaker configuration provides a coherent sound source, by implementing a loudspeaker system in a specific deployment pattern and with defined factory presets.

L-ACOUSTICS® factory presets secure the coupling between the different transducer sections, whether it is internal coupling as in active loudspeaker enclosures, or external coupling as when several loudspeaker enclosures are combined.

Users can adjust preset parameters on top of factory settings and for predefined channel sets.

Channel sets have been defined for the presets dedicated to active loudspeaker enclosures and to some specific loudspeaker configurations. A channel set maintains a coherent coupling by linking several output channels for the setting of routing, gain and delay parameters. For example, [LF HF] is a channel set for 2-way loudspeaker enclosure presets, and [SR SB SB SB] is a channel set for cardioid subwoofer presets.

The *sections 4 to 7* of this document are dedicated to the different L-ACOUSTICS® product families. They feature tables describing the recommended loudspeaker configurations for each system, with the corresponding factory presets and the main resulting acoustic properties.

When applicable, refer to the user manual of the related system for the limit between *coupled* vs *separated* subwoofers.

For some loudspeaker enclosure combinations, it is still necessary to adjust the delay values for time-alignment. Refer to *section 8* for pre-alignment delay values.

2.3 Frequency response contour

For coaxial loudspeaker enclosures, L-ACOUSTICS® provides 3 distinct contours:

- The *_FR* presets, for most of FOH applications;
- The *_FI* presets, for spoken word, classical music, jazz, or fill systems;
- The *_MO* presets, for half-space loading conditions, typically monitor applications.

For current WST® systems, L-ACOUSTICS® provides 1 or 2 distinct contours:

- A *main* preset, ensuring a reference FOH contour to the line source with usual deployment parameters;
- An additional *_FI* preset, *for some systems only*, dedicated to loudspeaker enclosures used as a fill system.

The oldest WST® systems inherit from a legacy preset structure (*_HI and _LO* presets).

If necessary, users can adjust the sonic signature of L-ACOUSTICS® systems through the *Contour EQ* tools in LA NETWORK MANAGER.

The *Array Morphing* tool provides two parameters, *zoom factor* and *LF contour*, that allow users to adjust the response of a WST® system. At any reference listening distance and with any line source length, the engineer can obtain the sonic signature of a bigger, smaller, closer or further system, and can unify the sonic signature of multiple sources. Refer to the **LA NETWORK MANAGER tutorial** and **ARRAY MORPHING white paper** for detailed information.

3 ONBOARD PRESET LIBRARIES

Power resources
Each onboard preset library includes the L-ACOUSTICS® loudspeaker enclosures whose power requirements match the delivering capability of the corresponding amplified controller.
LA8 PRESET LIBRARY covers all L-ACOUSTICS® loudspeaker enclosures. **LA4 PRESET LIBRARY** is restricted to loudspeaker enclosures that require no more than 800 W into 8 Ω or 1000 W into 4 Ω.

3.1 LA4 amplified controller

The LA4 onboard PRESET LIBRARY is stored in the factory memory locations (from 011 to 199) of the controller.
The memory locations from 001 to 010 are dedicated to the storage of presets modified by the user.
In the table below, each of the factory presets is described with its memory location number, name, and family.

LA4 PRESET LIBRARY 3.0 – PART 1/2			
N°	**Preset name**	**Description**	**Family**
011	KIVA	KIVA, full range, FOH	KIVA
012	KIVA_FI	KIVA, full range, fill	
013	KIVA_SB15	KIVA & SB15m, full range, X-OVER=100 Hz, FOH	SB15KIVA
014	KIVA_KILO	KIVA & KILO, full range, X-OVER=100 Hz, FOH	KILOKIVA
015	ARCS_LO	ARCS, full range, LO contour	ARCS
016	ARCS_LO_60	ARCS, HPF=60 Hz, LO contour	
017	ARCS_LO_100	ARCS, HPF=100 Hz, LO contour	
018	ARCS_HI	ARCS, full range, HI contour	
019	ARCS_HI_60	ARCS, HPF=60 Hz, HI contour	
020	ARCS_HI_100	ARCS, HPF=100 Hz, HI contour	
021	ARCS_WIFO	ARCS WIDE or ARCS FOCUS, full range, FOH	ARCS_WF
022	ARCS_WIFO_FI	ARCS WIDE or ARCS FOCUS, full range, fill	
023	SB18_60	SB18, LPF=60 Hz	SB18
024	SB18_100	SB18, LPF=100 Hz	
025	SB18_60_C	SB18, LPF=60 Hz, cardioid pattern	
026	SB18_100_C	SB18, LPF=100 Hz, cardioid pattern	
027	SB118_60	SB118, LPF=60 Hz	SB118
028	SB118_100	SB118, LPF =100 Hz	
029	SB118_60_C	SB118, LPF =60 Hz, cardioid pattern	
030	SB118_100_C	SB118, LPF =100 Hz, cardioid pattern	
031	SB15_100	SB15, LPF=100 Hz	SB15
032	SB15_100_C	SB15, LPF=100 Hz, cardioid pattern	
033	KILO	KILO, LPF=100 Hz	KILO
034	12XTA_FI	12XT active, full range, fill	12XTA
035	12XTA_FI_100	12XT active, HPF=100 Hz, fill	
036	12XTA_FR	12XT active, full range, FOH	
037	12XTA_FR_100	12XT active, HPF=100 Hz, FOH	
038	12XTA_MO	12XT active, full range, monitor	
039	12XTA_MO_100	12XT active, HPF=100 Hz, monitor	
040	12XTP_FI	12XT passive, full range, fill	12XTP
041	12XTP_FI_100	12XT passive, HPF=100 Hz, fill	
042	12XTP_FR	12XT passive, full range, FOH	
043	12XTP_FR_100	12XT passive, HPF=100 Hz, FOH	
044	12XTP_MO	12XT passive, full range, monitor	
045	12XTP_MO_100	12XT passive, HPF=100 Hz, monitor	

LA4 PRESET LIBRARY 3.0 – PART 2/2			
N°	Preset name	Description	Family
046	8XT_FI	8XT, full range, fill	8XT
047	8XT_FI_100	8XT, HPF=100 Hz, fill	
048	8XT_FR	8XT, full range, FOH	
049	8XT_FR_100	8XT, HPF=100 Hz, FOH	
050	8XT_MO	8XT, full range, monitor	
051	8XT_MO_100	8XT, HPF=100 Hz, monitor	
052	5XT	5XT, full range	5XT
053	115XT_FI	115XT, full range, fill	115XT
054	115XT_FI_100	115XT, HPF=100 Hz, fill	
055	115XT_FR	115XT, full range, FOH	
056	115XT_FR_100	115XT, HPF=100 Hz, FOH	
057	115XT_MO	115XT, full range, monitor	
058	115XT_MO_100	115XT, HPF=100 Hz, monitor	
059	115bA_FI	MTD115b active, full range, fill	MTD115bA
060	115bA_FI_100	MTD115b active, HPF=100 Hz, fill	
061	115bA_FR	MTD115b active, full range, FOH	
062	115bA_FR_100	MTD115b active, HPF=100 Hz, FOH	
063	115bA_MO	MTD115b active, full range, monitor	
064	115bA_MO_100	MTD115b active, HPF=100 Hz, monitor	
065	115bP_FI	MTD115b passive, full range, fill	MTD115bP
066	115bP_FI_100	MTD115b passive, HPF=100 Hz, fill	
067	115bP_FR	MTD115b passive, full range, FOH	
068	115bP_FR_100	MTD115b passive, HPF=100 Hz, FOH	
069	115bP_MO	MTD115b passive, full range, monitor	
070	115bP_MO_100	MTD115b passive, HPF=100 Hz, monitor	
071	112XT_FI	112XT, full range, fill	112XT
072	112XT_FI_100	112XT, HPF=100 Hz, fill	
073	112XT_FR	112XT, full range, FOH	
074	112XT_FR_100	112XT, HPF=100 Hz, FOH	
075	112XT_MO	112XT, full range, monitor	
076	112XT_MO_100	112XT, HPF=100 Hz, monitor	
077	112b_FI	MTD112b, full range, fill	MTD112b
078	112b_FI_100	MTD112b, HPF=100 Hz, fill	
079	112b_FR	MTD112b, full range, FOH	
080	112b_FR_100	MTD112b, HPF=100 Hz, FOH	
081	112b_MO	MTD112b, full range, monitor	
082	112b_MO_100	MTD112b, HPF=100 Hz, monitor	
083	108a_FI	MTD108a, full range, fill	MTD108a
084	108a_FI_100	MTD108a, HPF=100 Hz, fill	
085	108a_FR	MTD108a, full range, FOH	
086	108a_FR_100	MTD108a, HPF=100 Hz, FOH	
087	108a_MO	MTD108a, full range, monitor	
088	108a_MO_100	MTD108a, HPF=100 Hz, monitor	
089	FLAT_LA4	Flat EQ, protection minimizing clipping risks	HYBRID

3.2 LA8 amplified controller

The LA8 onboard PRESET LIBRARY is stored in the factory memory locations (from 011 to 199) of the controller.
The memory locations from 001 to 010 are dedicated to the storage of presets modified by the user.
In the table below, each of the factory presets is described with its memory location number, name, and family.

LA8 PRESET LIBRARY 3.0 – PART 1/3			
N°	**Preset name**	**Description**	**Family**
011	K1	K1, full range	K1
012	K1SB_60	K1-SB, LPF=60 Hz, optimized for CONTOUR configuration	K1-SB
013	K1SB_X	K1-SB, LPF=200 Hz, optimized for THROW configuration	
014	V-DOSC_LO	V-DOSC, full range, LO contour	V-DOSC
015	V-DOSC_LO_60	V-DOSC, HPF=60 Hz, LO contour	
016	V-DOSC_LO_X	V-DOSC, full range, LO contour, optimized for [SB218_X] & [dV-S_X] presets	
017	V-DOSC_HI	V-DOSC, full range, HI contour	
018	V-DOSC_HI_60	V-DOSC, HPF=60 Hz, HI contour	
019	V-DOSC_HI_X	V-DOSC, full range, HI contour, optimized for [SB218_X] & [dV-S_X] presets	
020	KUDO50_25	KUDO, HPF=25 Hz, 50° K-Louver settings	KUDO
021	KUDO50_40	KUDO, HPF=40 Hz, 50° K-Louver settings	
022	KUDO50_60	KUDO, HPF=60 Hz, 50° K-Louver settings	
023	KUDO80_25	KUDO, HPF=25 Hz, 80° K-Louver settings	
024	KUDO80_40	KUDO, HPF=40 Hz, 80° K-Louver settings	
025	KUDO80_60	KUDO, HPF=60 Hz, 80° K-Louver settings	
026	KUDO110_25	KUDO, HPF=25 Hz, 110° K-Louver settings	
027	KUDO110_40	KUDO, HPF=40 Hz, 110° K-Louver settings	
028	KUDO110_60	KUDO, HPF=60 Hz, 110° K-Louver settings	
029	KARA	KARA, full range, FOH	KARA
030	KARA_FI	KARA, HPF=100 Hz, fill	
031	KARADOWNK1	KARA, HPF=100 Hz, optimized delay for K1 downfill	
032	dV_FI	dV-DOSC, HPF=100 Hz, fill	dV-DOSC
033	dV_LO	dV-DOSC, full range, LO contour	
034	dV_LO_100	dV-DOSC, HPF=100 Hz, LO contour	
035	dV_HI	dV-DOSC, full range, HI contour	
036	dV_HI_100	dV-DOSC, HPF=100 Hz, HI contour	
037	dV_dV-S _LO	dV-DOSC & dV-SUB, X-OVER=100 Hz, LO contour	dV-D_dVS
038	dV_dV-S _HI	dV-DOSC & dV-SUB, X-OVER=100 Hz, HI contour	
039	dV_dV-S _LO60	dV-DOSC & dV-SUB, HPF=60 Hz, X-OVER=100 Hz, LO contour	
040	dV_dV-S _HI60	dV-DOSC & dV-SUB, HPF=60 Hz, X-OVER=100 Hz, HI contour	
041	dV-S_60_100	dV-SUB, HPF=60 Hz, LPF=100 Hz	dV-SUB
042	dV-S_100	dV-SUB, LPF=100 Hz	
043	dV-S_60_X	dV-SUB, HPF=60 Hz, LPF=200 Hz, optimized for [V-DOSC_××_60] presets	
044	dV-S_X	dV-SUB, LPF=200 Hz, optimized for [V-DOSC_××_X] presets	
045	ARCS_II	ARCS II, full range	ARCS_II
046	ARCS_LO	ARCS, full range, LO contour	ARCS
047	ARCS_LO_60	ARCS, HPF=60 Hz, LO contour	
048	ARCS_LO_100	ARCS, HPF=100 Hz, LO contour	
049	ARCS_HI	ARCS, full range, HI contour	
050	ARCS_HI_60	ARCS, HPF=60 Hz, HI contour	
051	ARCS_HI_100	ARCS, HPF=100 Hz, HI contour	
052	ARCS_WIFO	ARCS WIDE or ARCS FOCUS, full range, FOH	ARCS_WF
053	ARCS_WIFO_FI	ARCS WIDE or ARCS FOCUS, full range, fill	

LA8 PRESET LIBRARY 3.0 – PART 2/3			
N°	Preset name	Description	Family
054	HIQ_FI	HIQ, full range, fill	115XTHiQ
055	HIQ_FI_100	HIQ, HPF=100 Hz, fill	
056	HIQ_FR	HIQ, full range, FOH	
057	HIQ_FR_100	HIQ, HPF=100 Hz, FOH	
058	HIQ_MO	HIQ, full range, monitor	
059	HIQ_MO_100	HIQ, HPF=100 Hz, monitor	
060	SB28_60	SB28, LPF=60 Hz	SB28
061	SB28_100	SB28, LPF=100 Hz	
062	SB28_60_C	SB28, LPF=60 Hz, cardioid pattern	
063	SB28_100_C	SB28, LPF=100 Hz, cardioid pattern	
064	SB218_60	SB218, LPF=60 Hz	SB218
065	SB218_100	SB218, LPF=100 Hz	
066	SB218_X	SB218, LPF=200 Hz, optimized for [V-DOSC_××_X] presets	
067	SB18_60	SB18, LPF=60 Hz	SB18
068	SB18_100	SB18, LPF=100 Hz	
069	SB18_60_C	SB18, LPF=60 Hz, cardioid pattern	
070	SB18_100_C	SB18, LPF=100 Hz, cardioid pattern	
071	SB118_60	SB118, LPF=60 Hz	SB118
072	SB118_100	SB118, LPF=100 Hz	
073	SB118_60_C	SB118, LPF=60 Hz, cardioid pattern	
074	SB118_100_C	SB118, LPF=100 Hz, cardioid pattern	
075	SB15_100	SB15, LPF=100 Hz	SB15
076	SB15_100_C	SB15, LPF=100 Hz, cardioid pattern	
077	KILO	KILO, LPF=100 Hz	KILO
078	KIVA	KIVA, full range, FOH	KIVA
079	KIVA_FI	KIVA, full range, fill	
080	KIVA_SB15	KIVA & SB15m, X-OVER=100 Hz, full range, FOH	SB15KIVA
081	KIVA_KILO	KIVA & KILO, full range, X-OVER=100 Hz, FOH	KILOKIVA
082	12XTA_FI	12XT active, full range, fill	12XTA
083	12XTA_FI_100	12XT active, HPF=100 Hz, fill	
084	12XTA_FR	12XT active, full range, FOH	
085	12XTA_FR_100	12XT active, HPF=100 Hz, FOH	
086	12XTA_MO	12XT active, full range, monitor	
087	12XTA_MO_100	12XT active, HPF=100 Hz, monitor	
088	12XTP_FI	12XT passive, full range, fill	12XTP
089	12XTP_FI_100	12XT passive, HPF=100 Hz, fill	
090	12XTP_FR	12XT passive, full range, FOH	
091	12XTP_FR_100	12XT passive, HPF=100 Hz, FOH	
092	12XTP_MO	12XT passive, full range, monitor	
093	12XTP_MO_100	12XT passive, HPF=100 Hz, monitor	
094	8XT_FI	8XT, full range, fill	8XT
095	8XT_FI_100	8XT, HPF=100 Hz, fill	
096	8XT_FR	8XT, full range, FOH	
097	8XT_FR_100	8XT, HPF=100 Hz, FOH	
098	8XT_MO	8XT, full range, monitor	
099	8XT_MO_100	8XT, HPF=100 Hz, monitor	

LA8 PRESET LIBRARY 3.0 – PART 3/3			
N°	**Preset name**	**Description**	**Family**
100	5XT	5XT, full range	5XT
101	115XT_FI	115XT, full range, fill	115XT
102	115XT_FI_100	115XT, HPF=100 Hz, fill	
103	115XT_FR	115XT, full range, FOH	
104	115XT_FR_100	115XT, HPF=100 Hz, FOH	
105	115XT_MO	115XT, full range, monitor	
106	115XT_MO_100	115XT, HPF=100 Hz, monitor	
107	115bA_FI	MTD115b active, full range, fill	MTD115bA
108	115bA_FI_100	MTD115b active, HPF=100 Hz, fill	
109	115bA_FR	MTD115b active, full range, FOH	
110	115bA_FR_100	MTD115b active, HPF=100 Hz, FOH	
111	115bA_MO	MTD115b active, full range, monitor	
112	115bA_MO_100	MTD115b active, HPF=100 Hz, monitor	
113	115bP_FI	MTD115b passive, full range, fill	MTD115bP
114	115bP_FI_100	MTD115b passive, HPF=100 Hz, fill	
115	115bP_FR	MTD115b passive, full range, FOH	
116	115bP_FR_100	MTD115b passive, HPF=100 Hz, FOH	
117	115bP_MO	MTD115b passive, full range, monitor	
118	115bP_MO_100	MTD115b passive, HPF=100 Hz, monitor	
119	112XT_FI	112XT, full range, fill	112XT
120	112XT_FI_100	112XT, HPF=100 Hz, fill	
121	112XT_FR	112XT, full range, FOH	
122	112XT_FR_100	112XT, HPF=100 Hz, FOH	
123	112XT_MO	112XT, full range, monitor	
124	112XT_MO_100	112XT, HPF=100 Hz, monitor	
125	112b_FI	MTD112b, full range, fill	MTD112b
126	112b_FI_100	MTD112b, HPF=100 Hz, fill	
127	112b_FR	MTD112b, full range, FOH	
128	112b_FR_100	MTD112b, HPF=100 Hz, FOH	
129	112b_MO	MTD112b, full range, monitor	
130	112b_MO_100	MTD112b, HPF=100 Hz, monitor	
131	108a_FI	MTD108a, full range, fill	MTD108a
132	108a_FI_100	MTD108a, HPF=100 Hz, fill	
133	108a_FR	MTD108a, full range, FOH	
134	108a_FR_100	MTD108a, HPF=100 Hz, FOH	
135	108a_MO	MTD108a, full range, monitor	
136	108a_MO_100	MTD108a, HPF=100 Hz, monitor	
137	FLAT_LA8	Flat EQ, protection minimizing clipping risks	HYBRID

3.3 FLAT presets

Protection
The transducer connected to an output channel of a [FLAT] preset is not protected by L-DRIVE. The only active limitation allows minimizing clipping risks to protect the amplifier.
When driving a 3rd party loudspeaker enclosure, it is then recommended to use an external DSP device with a preset specifically designed for this model.

With a [FLAT] preset, an input signal is amplified and directly routed to output without any modification of the frequency response. All the output parameters are accessible (Mute, Gain, Delay, Polarity, and Routing).

Using the [FLAT] preset with LA4 or LA8 provides 6 dB or 8 dB of headroom respectively.

[FLAT]

Amplifier outputs	**Channels**	**Default parameters**				
		Routing	Gain	Delay	Polarity	Mute
OUT 1	PA	IN A	0 dB	0 ms	+	ON
OUT 2	PA	IN A	0 dB	0 ms	+	ON
OUT 3	PA	IN B	0 dB	0 ms	+	ON
OUT 4	PA	IN B	0 dB	0 ms	+	ON

4 VARIABLE CURVATURE WST® SYSTEMS

The factory presets dedicated to variable curvature WST® line sources are optimized for **long throw** applications.
In the following sections, tables describe the loudspeaker configurations and the factory presets for each system. Discriminant acoustic properties of each loudspeaker configuration are given, such as -10 dB bandwidth or LF limit, frequency response contour, or directivity specificity.

4.1 K1

Implementing an additional SB×× subwoofer system
Use [SB××_60] for a standard deployment or [SB××_60_C] for a cardioid array.

Loudspeaker configuration		LA8 preset(s)			Acoustic properties
		K1	K1-SB	KARA	
K1 line source		[K1]	-	-	35 Hz-20 kHz
K1 line source + Coupled K1-SB	THROW (K1-SB on top)	[K1]	[K1SB_X]	-	Enhanced LF throw
	CONTOUR (K1-SB beside or behind)	[K1]	[K1SB_60]	-	Down to 30 Hz Reinforced LF contour Rear LF rejection (central or side polarized)
K1 line source + Coupled KARA line source*		[K1]	-	[KARADOWNK1]	Downfill coverage

* This configuration can be combined with coupled K1-SB

[K1]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
K1	Left LF*	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	Right LF*	OUT 2	LF					ON
	MF	OUT 3	MF					ON
	HF	OUT 4	HF					ON

* Left/right when looking at the front face of the enclosure.

[K1SB_X] and [K1SB_60]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
K1-SB	OUT 1	SB	IN A	0 dB	0 ms	+	ON
K1-SB	OUT 2	SB	IN A	0 dB	0 ms	+	ON
K1-SB	OUT 3	SB	IN A	0 dB	0 ms	+	ON
K1-SB	OUT 4	SB	IN A	0 dB	0 ms	+	ON

[KARADOWNK1]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay*	Polarity	Mute
KARA	LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 2	HF					ON
KARA	LF	OUT 3	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 4	HF					ON

* The factory parameters already include optimal delay value for the coupling of a K1 line source with KARA as a downfill.

4.2 KUDO®

Loudspeaker configuration	LA8 preset(s)		Acoustic properties
	KUDO	**SB18** or **SB28***	
KUDO line source	[KUDO××_40]	-	40 Hz – 20 kHz
	[KUDO××_25]		Down to 35 Hz
KUDO line source + SB subwoofer	[KUDO××_60]	[SB××_60]	Down to 32 Hz (SB18) or 25 Hz (SB28) Reinforced LF contour

* With SB subwoofers as a cardioid array, use [SB××_××_**C**].

K-LOUVER® and presets
Always ensure that the K-LOUVER® panels are set in accordance with the selected preset:
[KUDO50_××]: 50° ;
[KUDO80_××]: 80° ;
[KUDO110_××]: 110°.
Refer to the KUDO user manual for details.

* Left/right when looking at the front face of the enclosure.

[KUDO××_××]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
KUDO	Left LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	Right LF	OUT 2	LF					ON
	MF	OUT 3	MF					ON
	HF	OUT 4	HF					ON

4.3 KARA

KARA® and KARAi are different versions of the same enclosure. They share the same factory presets and recommended loudspeaker configurations.

Loudspeaker configuration	LA8 preset(s)		Acoustic properties
	KARA	SB18 or SB28*	
KARA line source	[KARA]	-	55 Hz – 20 kHz
KARA line source + Coupled SB subwoofer	[KARA]	[SB××_100]	Down to 32 Hz (SB18) or 25 Hz (SB28) Reinforced LF contour
KARA line source + Separated SB subwoofer	[KARA]	[SB××_60]	
Single or pair of KARA enclosures	[KARA_FI]	-	High-pass at 100 Hz Flat response

* With SB subwoofers as a cardioid array, use [SB××_××_**C**].

[KARA]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
KARA	LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 2	HF					ON
KARA	LF	OUT 3	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 4	HF					ON

[KARA_FI]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
KARA	LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 2	HF					ON
KARA	LF	OUT 3	LF	IN B	0 dB	0 ms	+	ON
	HF	OUT 4	HF					ON

4.4 KIVA-SB15m

Loudspeaker configuration	Preset(s)		Acoustic properties
	KIVA	SB15m*	
KIVA line source	[KIVA]	- -	80 Hz – 20 kHz
KIVA line source + Coupled SB15m	[KIVA_SB15]		Down to 40 Hz Reinforced LF contour
	[KIVA]	[SB15_100]	
Single or pair of KIVA enclosures	[KIVA_FI]	-	80 Hz – 20 kHz Flat response
Pair of KIVA enclosures + Coupled SB15m	[KIVA_FI]	[SB15_100]	Down to 40 Hz Reinforced LF contour

* With SB subwoofers as a cardioid array, use [SB××_××_**C**].

[KIVA]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
KIVA	OUT 1	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 2	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 3	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 4	PA	IN A	0 dB	0 ms	+	ON

[KIVA_FI]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
KIVA	OUT 1	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 2	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 3	PA	IN B	0 dB	0 ms	+	ON
KIVA	OUT 4	PA	IN B	0 dB	0 ms	+	ON

[KIVA_SB15]*

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
SB15m	OUT 1	LF	IN A	0 dB	0 ms	+	ON
KIVA	OUT 2	PA					ON
KIVA	OUT 3	PA					ON
KIVA	OUT 4	PA					ON

* Hybrid preset combining [KIVA] with [SB15_100], pre-alignment delay included.

4.5 KIVA-KILO

Loudspeaker configuration	Preset(s)			Acoustic properties
	KIVA	KILO	SB18*	
KIVA line source	[KIVA]	-	-	80 Hz – 20 kHz
KIVA line source + Coupled KILO	[KIVA_KILO]		-	Down to 50 Hz
KIVA line source + Coupled KILO + SB18	[KIVA_KILO]		[SB18_60]	Down to 32 Hz Reinforced LF contour
Single or pair of KIVA enclosures	[KIVA_FI]	-	-	80 Hz – 20 kHz Flat response

* With SB subwoofers as a cardioid array, use [SB××_××_**C**].

[KIVA]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
KIVA	OUT 1	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 2	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 3	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 4	PA	IN A	0 dB	0 ms	+	ON

[KIVA_FI]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
KIVA	OUT 1	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 2	PA	IN A	0 dB	0 ms	+	ON
KIVA	OUT 3	PA	IN B	0 dB	0 ms	+	ON
KIVA	OUT 4	PA	IN B	0 dB	0 ms	+	ON

[KIVA_KILO]*

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
KILO	OUT 1	LF	IN A	0 dB	0 ms	+	ON
KIVA	OUT 2	PA					ON
KIVA	OUT 3	PA					ON
KIVA	OUT 4	PA					ON

* Hybrid preset combining [KIVA] with [KILO], pre-alignment delay included.

[KILO]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
KILO	OUT 1	SB	IN A	0 dB	0 ms	+	ON
KILO	OUT 2	SB	IN A	0 dB	0 ms	+	ON
KILO	OUT 3	SB	IN B	0 dB	0 ms	+	ON
KILO	OUT 4	SB	IN B	0 dB	0 ms	+	ON

4.6 V-DOSC®

Loudspeaker configuration	LA8 preset(s)				Acoustic properties
	V-DOSC	dV-SUB	SB28/SB218	dV-DOSC	
V-DOSC line source	[V-DOSC _LO] or [V-DOSC_HI]	-	-	-	40 Hz – 20 kHz
V-DOSC line source + Coupled dV-SUB	[V-DOSC_×× _X]	[dV-S_X]	-	-	Down to 35 Hz Reinforced LF contour
V-DOSC line source + SB28	[V-DOSC _××_60]	-	[SB28_60]	-	Down to 25 Hz Reinforced LF contour
V-DOSC line source + Coupled SB218	[V-DOSC_×× _X]	-	[SB218_X]	-	
V-DOSC line source + Coupled dV-SUB + SB28	[V-DOSC_××_60]	[dV-S_60_X]	[SB28_60]	-	Down to 25 Hz Reinforced LF contour Additional LF resources
V-DOSC line source + Coupled dV-DOSC	[V-DOSC_××]	-	-	[dV_××_100]	Downfill coverage

* Standard HF contour with [××_LO] or increased HF contour with [××_HI]
* * With SB subwoofers as a cardioid array, use [SB××_××_**C**].

[V-DOSC_LO], [V-DOSC_HI] and [V-DOSC_××_60] and [V-DOSC_××_X]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
V-DOSC	Left LF*	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	Right LF*	OUT 2	LF					ON
	MF	OUT 3	MF					ON
	HF	OUT 4	HF					ON

* Left/right when looking at the front face of the enclosure.

[dV-S_X] and [dV-S_60_X]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
dV-SUB	OUT 1	SB	IN A	0 dB	0 ms	+	ON
dV-SUB	OUT 2	SB	IN A	0 dB	0 ms	+	ON
dV-SUB	OUT 3	SB	IN B	0 dB	0 ms	+	ON
dV-SUB	OUT 4	SB	IN B	0 dB	0 ms	+	ON

[SB218_X]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
SB218	OUT 1	SB	IN A	0 dB	0 ms	+	ON
SB218	OUT 2	SB	IN A	0 dB	0 ms	+	ON
SB218	OUT 3	SB	IN B	0 dB	0 ms	+	ON
SB218	OUT 4	SB	IN B	0 dB	0 ms	+	ON

4.7 dV-DOSC

Loudspeaker configuration	LA8 preset(s)			Acoustic properties
	dV-DOSC*	dV-SUB	SB118, SB18 SB218 or SB28 **	
dV-DOSC line source	[dV_LO] or [dV_HI]	-	-	65 Hz – 20 kHz
dV-DOSC line source + Coupled dV-SUB	[dV_dV-S_××]		-	Down to 35 Hz Reinforced LF contour
	[dV_××_100]	[dV-S_100]		
dV-DOSC line source + Coupled SB subwoofer	[dV_××_100]	-	[SB××_100]	Down to 32 Hz (SB18/SB118) or 25 Hz (SB28/SB218)
dV-DOSC line source + Coupled dV-SUB + SB subwoofer	[dV_dV-S_××60]		[SB××_60]	
	[dV_××_100]	[dV-S_60_100]		
Single or pair of dV-DOSC enclosures	[dV_FI]	-	-	High-pass at 100 Hz Flat response

* Standard HF contour with [××_LO] or increased HF contour with [××_HI]
** With SB subwoofers as a cardioid array, use [SB××_××_**C**].

[dV _LO], [dV _HI], [dV_××_60] and [dV_××_100]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
dV-DOSC	LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 2	HF					ON
dV-DOSC	LF	OUT 3	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 4	HF					ON

[dV_FI]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
dV-DOSC	LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 2	HF					ON
dV-DOSC	LF	OUT 3	LF	IN B	0 dB	0 ms	+	ON
	HF	OUT 4	HF					ON

[dV-S_100] and [dV-S_60_100]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
dV-SUB	OUT 1	SB	IN A	0 dB	0 ms	+	ON
dV-SUB	OUT 2	SB	IN A	0 dB	0 ms	+	ON
dV-SUB	OUT 3	SB	IN B	0 dB	0 ms	+	ON
dV-SUB	OUT 4	SB	IN B	0 dB	0 ms	+	ON

[dV_dV-S_××]* and [dV_dV-S_××60]**

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
dV-SUB		OUT 1	SB	IN A	0 dB	0 ms	+	ON
dV-SUB		OUT 2	SB	IN A	0 dB	0 ms	+	ON
dV-DOSC	LF	OUT 3	LF	IN B	0 dB	0 ms	+	ON
	HF	OUT 4	HF					ON

* Hybrid preset combining [dV_LO_100] or [dV_HI_100] with [dV-S_100], pre-alignment delay included.
** Hybrid preset combining [dV_LO_100] or [dV_HI_100] with [dV-S_60_100], pre-alignment delay included.

5 CONSTANT CURVATURE WST® SYSTEMS

The factory presets dedicated to constant curvature WST® line sources are optimized for **medium throw** applications. In the following sections, tables describe the loudspeaker configurations and the factory presets for each system. Discriminant acoustic properties of each loudspeaker configuration are given, such as -10 dB bandwidth or LF limit, or frequency response contour.

5.1 ARCS®II

Loudspeaker configuration	LA8 preset(s)		Acoustic properties
	ARCS II	SB28*	
ARCS II line source	[ARCS_II]	-	50 Hz - 20 kHz
ARCS II line source + SB28	[ARCS_II]	[SB28_60]	Down to 25 Hz Reinforced LF contour

* With SB subwoofers as a cardioid array, use [SB××_××_**C**].

[ARCS II]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
ARCS II	LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 2	HF					ON
ARCS II	LF	OUT 3	LF	IN B	0 dB	0 ms	+	ON
	HF	OUT 4	HF					ON

5.2 ARCS® WIDE / ARCS® FOCUS

Loudspeaker configuration	Preset(s)		Acoustic properties
	ARCS WIDE/FOCUS	SB18m*	
WIFO line source	[ARCS_WIFO]	-	55 Hz - 20 kHz
WIFO Line source + SB18m	[ARCS_WIFO]	[SB18_60]	Down to 32 Hz Reinforced LF contour
Single WIFO enclosure	[ARCS_WIFO_FI]	-	55 Hz - 20 kHz Flat response
Single WIFO enclosure + SB18m	[ARCS_WIFO_FI]	[SB18_60]	Down to 32 Hz Reinforced LF contour

* With SB subwoofers as a cardioid array, use [SB××_××_**C**].

[ARCS_WIFO] and [ARCS_WIFO_FI]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
ARCS WIDE/FOCUS	OUT 1	PA	IN A	0 dB	0 ms	+	ON
ARCS WIDE/FOCUS	OUT 2	PA	IN A	0 dB	0 ms	+	ON
ARCS WIDE/FOCUS	OUT 3	PA	IN B	0 dB	0 ms	+	ON
ARCS WIDE/FOCUS	OUT 4	PA	IN B	0 dB	0 ms	+	ON

5.3 ARCS®

Loudspeaker configuration	Preset(s)		Acoustic properties
	ARCS *	SB18/SB118 or SB28/SB218 **	
ARCS line source	[ARCS_LO] or [ARCS_HI]	-	50 Hz – 20 kHz
ARCS line source + SB subwoofer	[ARCS_××_60]	[SB××_60]	Down to 32 Hz (SB18/SB118) or 25 Hz (SB28/SB218) Reinforced LF contour
ARCS line source + Coupled SB subwoofer	[ARCS××_100]	[SB××_100]	

* Standard HF contour with [××_LO] or increased HF contour with [××_HI]
** With SB subwoofers as a cardioid array, use [SB××_××_**C**].

[ARCS_LO], [ARCS_HI], [ARCS_××_60] and [ARCS_××_100]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
ARCS	LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 2	HF					ON
ARCS	LF	OUT 3	LF	IN B	0 dB	0 ms	+	ON
	HF	OUT 4	HF					ON

6 COAXIAL LOUDSPEAKER ENCLOSURES

The factory presets dedicated to coaxial enclosures are optimized for **short throw** applications.
In the following sections, tables describe the loudspeaker configurations and the factory presets for each system. Discriminant acoustic properties of each loudspeaker configuration are given, such as -10 dB bandwidth or LF limit, or frequency response contour.

6.1 5XT

Loudspeaker configuration	Preset(s)		Acoustic properties
	5XT	**SB15m***	
5XT	[5XT]	-	95 Hz - 20 kHz
5XT+ SB15m	[5XT]	[SB15_100]	Down to 40 Hz Reinforced LF contour

* With SB subwoofers as a cardioid array, use [SB××_××_**C**].

[5XT]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
5 XT	OUT 1	PA	IN A	0 dB	0 ms	+	ON
5 XT	OUT 2	PA	IN A	0 dB	0 ms	+	ON
5 XT	OUT 3	PA	IN B	0 dB	0 ms	+	ON
5 XT	OUT 4	PA	IN B	0 dB	0 ms	+	ON

6.2 Other PASSIVE coaxial loudspeaker enclosures (8XT, 12XTP, MTD108a, MTD112b, MTD115bP)

Preset names

Passive coaxial	Preset
8XT	[8XT_××]
12XT in passive mode	[12XTP_××]
MTD108a	[108a_××]
MTD112b	[112b_××]
MTD115b in passive mode	[115bP_××]

Loudspeaker configuration	Preset(s)		Acoustic properties	
	Passive ×××	**SB15m, SB18** or **SB118***		
Coaxial	[×××_FR],[×××_FI] or [×××_MO]	-	Nominal bandwidth	Choice between 3 contours **
Coaxial + Coupled SB subwoofer	[×××_××_100]	[SB××_100]	Down to 40 Hz (SB15m) or 32 Hz (SB18/SB118) Reinforced LF contour	
	[×××_SB118]			

* With SB subwoofers as a cardioid array, use [SB××_××_**C**].
** [×××_FR] for FOH applications, [×××_FI] for speech, classical music, or fill, [×××_MO] flat in half-space loading conditions (floor, wall or ceiling)

[×××_FR], [×××_FI], [×××_MO] and [×××_××_100]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
Passive ×××	OUT 1	PA	IN A	0 dB	0 ms	+	ON
Passive ×××	OUT 2	PA	IN A	0 dB	0 ms	+	ON
Passive ×××	OUT 3	PA	IN B	0 dB	0 ms	+	ON
Passive ×××	OUT 4	PA	IN B	0 dB	0 ms	+	ON

6.3 ACTIVE coaxial loudspeaker enclosures (12XTA, 115XT HiQ, MTD115bA, 115XT)

Preset names

Coaxial enclosure	Preset
12XT in active mode	[12XTA_××]
115XT HiQ	[HiQ_××]
MTD115b in active mode	[115bA_××]
115XT	[115XT_××]

Loudspeaker configuration	Preset(s)		Acoustic properties	
	Active ×××	**SB18** or **SB118** *		
Coaxial	[×××_FR], [×××_FI] or [×××_MO]	-	Nominal bandwidth	Choice between 3 contours**
Coaxial + Coupled SB subwoofer	[×××_××_100]	[SB××_100]	Down to 32 Hz Reinforced LF contour	

* With SB subwoofers as a cardioid array, use [SB××_××_**C**].
** [×××_FR] for FOH applications, [×××_FI] for speech, classical music, or fill, [×××_MO] flat in half-space loading conditions (floor, wall or ceiling)

[×××_FR], [×××_FI], [×××_MO] and [×××_××_100]

Loudspeaker elements		Amplifier outputs	Channels	Default parameters				
				Routing	Gain	Delay	Polarity	Mute
Active ×××	LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
	HF	OUT 2	HF					ON
Active ×××	LF	OUT 3	LF	IN B	0 dB	0 ms	+	ON
	HF	OUT 4	HF					ON

7 SUBWOOFER ENCLOSURES

In this section, tables describe the loudspeaker configurations for L-ACOUSTICS® versatile subwoofers, and the corresponding factory presets. Discriminant acoustic properties of each loudspeaker configuration are given, such as -10 dB LF limit or directivity specificity.

Subwoofer	Available presets	Optimal compatibility
SB15m	[SB15_100] or [SB15_100_C]	Coupled KIVA, XT
SB18(i) **SB18m**	[SB18_60] or [SB18_60_C]	KUDO®, KARA®, KIVA/KILO, ARCS®, ARCS®WIDE, ARCS® FOCUS
	[SB18_100] or [SB18_100_C]	KARA®, ARCS®, XT
SB118	[SB118_60] or [SB118_60_C]	KUDO®, dV-DOSC/dV-SUB, KIVA/KILO, ARCS®
	[SB118_100] or [SB118_100_C]	dV-DOSC, ARCS®, XT, coupled MTD
SB28	[SB28_60] or [SB28_60_C]	K1, V-DOSC®, KUDO®, dV-DOSC/dV-SUB, KARA®/SB18, ARCS®, ARCS®II
	[SB28_100] or [SB28_100_C]	dV-DOSC, KARA®, coupled ARCS®
SB218	[SB218_60]	V-DOSC®, KUDO®, dV-DOSC/dV-SUB, ARCS®
	[SB218_100]	dV-DOSC, coupled ARCS®

Loudspeaker configuration*	Preset**	Acoustic properties
Standard	[SB××_60] or [SB××_100]	Down to 40 Hz (SB15m), 32 Hz (SB18/SB118) or 25 Hz (SB28/SB218)
Cardioid	[SB××_60_C] or [SB××_100_C]	Down to 40 Hz (SB15m), 32 Hz (SB18/SB118) or 25 Hz (SB28) Cardioid directivity pattern

* Refer to the subwoofer user manual for the recommended deployment patterns in each configuration
** SB28 and SB218 are exclusively driven by the LA8 amplified controller

[SB××_60] and [SB××_100]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
SB××	OUT 1	SB	IN A	0 dB	0 ms	+	ON
SB××	OUT 2	SB	IN A	0 dB	0 ms	+	ON
SB××	OUT 3	SB	IN B	0 dB	0 ms	+	ON
SB××	OUT 4	SB	IN B	0 dB	0 ms	+	ON

[SB××_××_C]

Loudspeaker elements	Amplifier outputs	Channels	Default parameters				
			Routing	Gain	Delay	Polarity	Mute
Reversed SB××	OUT 1	SR	IN A	0 dB	0 ms	+	ON
SB××	OUT 2	SB					ON
SB××	OUT 3	SB					ON
SB××	OUT 4	SB					ON

8 PRE-ALIGNMENT DELAY VALUES

Time-alignment from geometric measurements

When combining several loudspeaker systems, it is important to adjust their delay values to optimize acoustic summation. If no acoustic measurement tool is available, it is possible to use the *pre-alignment delay* values given in the tables on this section.

Pre-alignment delays have been measured with the enclosures at the same geometric location, front face on the same plane.

After adding these values to the factory presets, time-alignment is then obtained by adding the *geometric delay* to the closest system. The *geometric delay* is calculated from the path difference between a reference listening point and the center of each system.

How to proceed?

▶ Measure the *Path difference* = **PA** – **PB**,

with:
P: reference listening point,
A: center of the further system, named ***system a***,
B: center of the closest system, named ***system b***.

▶ Calculate the *Geometric delay* (s) = *Path difference* (m) / *Sound velocity* ($m.s^{-1}$),

with *Sound velocity* ≈ 340 $m.s^{-1}$ at 20°C and in dry air.

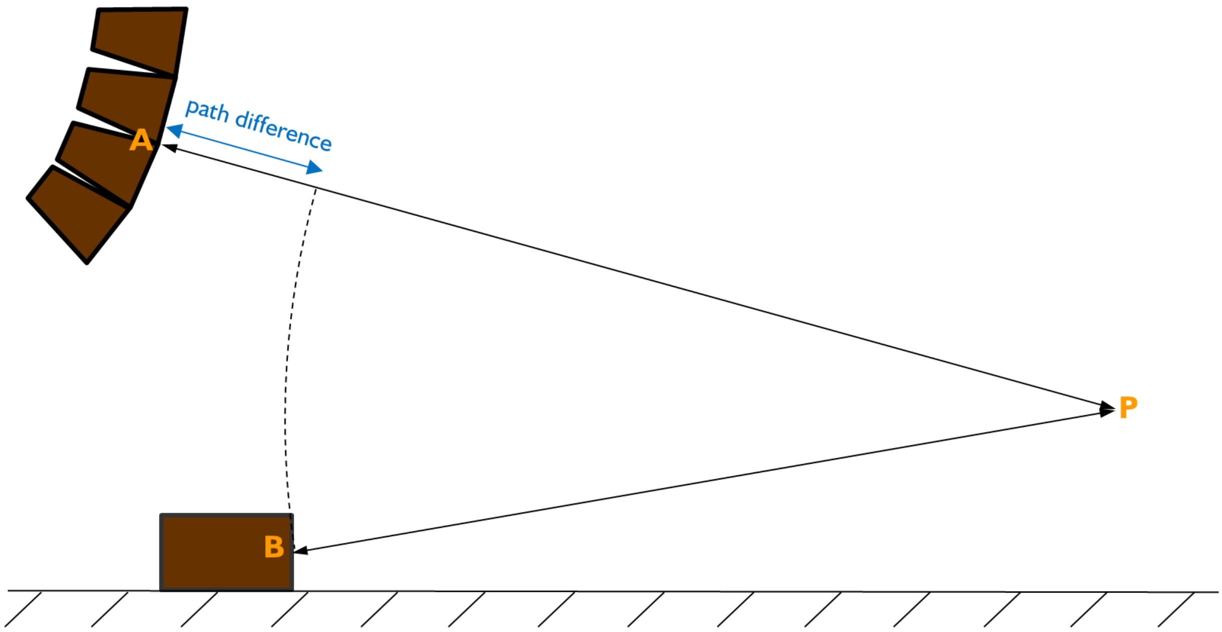
▶ Refer to the tables of this section to find the *Pre-alignment delay* ***a*** and the *Pre-alignment delay* ***b***, corresponding to the ***system a*** + ***system b*** combination.

▶ Add the *Alignment delay* to the factory preset of each system.

Being the closest to the reference listening point, the geometric delay must be added to the ***system b*** only:

Alignment delay (ms) for ***system a*** = *Pre-alignment delay* ***a*** (ms),
Alignment delay (ms) for ***system b*** = *Pre-alignment delay* ***b*** (ms) + *Geometric delay* (ms).

Normalization: If ≠ 0, retrieve *Pre-alignment delay* ***a*** to both *Alignment delay* values.



Illustrated example: line source + separated subwoofer

Laser rangefinders

The L-ACOUSTICS® **Tech Toolcase** includes two laser devices that can be used for geometric measurements: TruPulse™ 200 and Leica DISTO™ D3.

8.1 Variable curvature WST® systems

Combination PART 1/2	Presets	Pre-alignment delay values (ms)		
K1 + K1-SB	[K1] + [K1SB_X]	K1 = 0	K1-SB = 0	
	[K1] + [K1SB_60]	K1 = 6	K1-SB = 0	
K1 + SB28	[K1] + [SB28_60]	K1 = 0	SB28 = 6	
	[K1] + [SB28_60_C]	K1 = 0	SB28 = 0.5	
K1 + K1-SB + SB28	[K1] + [K1SB_X] + [SB28_60]	K1 = 0	K1-SB = 0	SB28 = 6
	[K1] + [K1SB_X] + [SB28_60_C]	K1 = 0	K1-SB = 0	SB28 = 0.5
	[K1] + [K1SB_60] + [SB28_60]	K1 = 8	K1-SB = 2	SB28 = 0
	[K1] + [K1SB_60] + [SB28_60_C]	K1 = 13.5	K1-SB = 7.5	SB28 = 0
KUDO + SB118	[KUDO××_60] + [SB118_60]	KUDO = 0	SB118 = 3.5	
	[KUDO××_60] + [SB118_60_C]	KUDO = 2	SB118 = 0	
KUDO + SB18	[KUDO××_60] + [SB18_60]	KUDO = 0	SB18 = 3.9	
	[KUDO××_60] + [SB18_60_C]	KUDO = 1.6	SB18 = 0	
KUDO + SB218	[KUDO××_60] + [SB218_60]	KUDO = 0	SB218 = 5	
KUDO + SB28	[KUDO××_60] + [SB28_60]	KUDO = 0	SB28 = 5	
	[KUDO××_60] + [SB28_60_C]	KUDO = 0.5	SB28 = 0	
KARA + SB18	[KARA] + [SB18_100]	KARA = 0	SB18 = 0	
	[KARA] + [SB18_100_C]	KARA = 5.5	SB18 = 0	
	[KARA] + [SB18_60]	KARA = 2.5	SB18 = 0	
	[KARA] + [SB18_60_C]	KARA = 8	SB18 = 0	
KARA + SB28	[KARA] + [SB28_100]	KARA = 0	SB28 = 1.35	
	[KARA] + [SB28_100_C]	KARA = 4.2	SB28 = 0	
	[KARA] + [SB28_60]	KARA = 0.3	SB28 = 0	
	[KARA] + [SB28_60_C]	KARA = 5.9	SB28 = 0	
KARA + SB18 + SB28	[KARA] + [SB18_100] + [SB28_60]	KARA = 0	SB18 = 0	SB28 = 1.3
	[KARA] + [SB18_100] + [SB28_60_C]	KARA = 4.2	SB18 = 4.2	SB28 = 0
KIVA + KILO	[KIVA] + [KILO]	KIVA = 0	KILO = 1.5	
KIVA/KILO + SB118	[KIVA_KILO] + [SB118_60]	KIVA/KILO = 0	SB118 = 5.9	
	[KIVA_KILO] + [SB118_60_C]	KIVA/KILO = 0	SB118 = 0.4	
KIVA/KILO + SB18	[KIVA_KILO] + [SB18_60]	KIVA/KILO = 0	SB18 = 6.3	
	[KIVA_KILO] + [SB18_60_C]	KIVA/KILO = 0	SB18 = 0.8	
KIVA + SB15m	[KIVA] + [SB15_100]	KIVA = 0	SB15m = 1.4	
	[KIVA] + [SB15_100_C]	KIVA = 2.4	SB15m = 0	
	[KIVA_FI] + [SB15_100]	KIVA = 0	SB15m = 0.6	
KIVA /SB15m + SB18	[KIVA_SB15] + [SB18_60]	KIVA/SB15m = 0	SB18 = 8.5	
	[KIVA_SB15] + [SB18_60_C]	KIVA/SB15m = 0	SB18 = 3	

Combination PART 2/2	**Presets**	**Pre-alignment delay values** (ms)		
V-DOSC + SB218	[V-DOSC_××_X] + [SB218_X]	V-DOSC = 1.8	SB218 = 0	
	[V-DOSC_××_60] + [SB218_60]	V-DOSC = 0	SB218 = 3.8	
V-DOSC + SB28	[V-DOSC_××_60] + [SB28_60]	V-DOSC = 0	SB28 = 3.8	
	[V-DOSC_××_60] + [SB28_60_C]	V-DOSC = 1.7	SB28 = 0	
V-DOSC + dV-SUB	[V-DOSC_××_X] + [dV-S_X]	V-DOSC = 0	dV-SUB = 0.2	
V-DOSC + dV-SUB + SB218	[V-DOSC_××_60] + [dV-S_60_X] + [SB218_60]	V-DOSC = 0	dV-SUB = 0.2	SB218 = 3.7
V-DOSC + dV-SUB + SB28	[V-DOSC_××_60] + [dV-S_60_X] + [SB28_60]	V-DOSC = 0	dV-SUB = 0.2	SB28 = 3.7
	[V-DOSC_××_60] + [dV-S_60_X] + [SB28_60_C]	V-DOSC = 1.9	dV-SUB = 2	SB28 = 0
V-DOSC + dV-DOSC	[V-DOSC_××_60] + [dV_××_100]	V-DOSC = 0	dV-DOSC = 0	
V-DOSC + dV-DOSC downfill	[V-DOSC_××_60] + [dV_××_100]	V-DOSC = 0	dV-DOSC = 0.04	
dV-DOSC + SB118	[dV_××_100] + [SB118_100]	dV = 2.7	SB118 = 0	
	[dV_××_100] + [SB118_100_C]	dV = 8.3	SB118 = 0	
dV-DOSC + SB218	[dV_××_100] + [SB218_100]	dV = 0.8	SB218 = 0	
dV-DOSC + SB18	[dV_××_100] + [SB18_100]	dV = 2.4	SB18 = 0	
	[dV_××_100] + [SB18_100_C]	dV = 8	SB18 = 0	
dV-DOSC + SB28	[dV_××_100] + [SB28_100]	dV = 0.8	SB28 = 0	
	[dV_××_100] + [SB28_100_C]	dV = 6.3	SB28 = 0	
dV-DOSC + dV-SUB	[dV_××_100] + [dV-S_100]	dV = 0	dV-SUB = 0	
dV-DOSC + dV-SUB + SB118	[dV_××100] + [dV-S_60_100] + [SB118_60]	dV = 0	dV-SUB = 0.75	SB118 = 4
	[dV_××_100] + [dV-S_60_100] + [SB118_60_C]	dV = 1.5	dV-SUB = 2.25	SB118 = 0
dV-DOSC + dV-SUB + SB218	[dV_××_100] + [dV-S_60_100] +[SB218_60]	dV = 0	dV-SUB = 0.75	SB218 = 4.5
dV-DOSC + dV-SUB + SB18	[dV_××_100] + [dV-S_60_100] + [SB18_60]	dV = 0	dV-SUB = 0.75	SB18 = 4.4
	[dV_××_100] + [dV-S_60_100] + [SB18_60_C]	dV = 1.1	dV-SUB = 1.85	SB18 = 0
dV-DOSC + dV-SUB + SB28	[dV_××_100] + [dV-S_60_100] + [SB28_60]	dV = 0	dV-SUB = 0.75	SB28 = 4.5
	[dV_××_100] + [dV-S_60_100] + [SB28_60_C]	dV = 1	dV-SUB = 1.75	SB28 = 0

8.2 Constant curvature WST® systems

Combination	**Presets**	**Pre-alignment delay values** (ms)	
ARCS + SB118	[ARCS_××_60] + [SB118_60]	ARCS = 0.8	SB118 = 0
	[ARCS_××_60] + [SB118_60_C]	ARCS = 6.3	SB118 = 0
	[ARCS_××_100] + [SB118_100]	ARCS = 1.4	SB118 = 0
	[ARCS_××_100] + [SB118_100_C]	ARCS = 6.9	SB118 = 0
ARCS + SB18	[ARCS_××_60] + [SB18_60]	ARCS = 0.4	SB18 = 0
	[ARCS_××_60] + [SB18_60_C]	ARCS = 5.9	SB18 = 0
	[ARCS_××_100] + [SB18_100]	ARCS = 1.1	SB18 = 0
	[ARCS_××_100] + [SB18_100_C]	ARCS = 6.6	SB18 = 0
ARCS + SB218	[ARCS_××_60] + [SB218_60]	ARCS = 0	SB218 = 0.9
	[ARCS_××_100] + [SB218_100]	ARCS = 0	SB218 = 0.3
ARCS + SB28	[ARCS_××_60] + [SB28_60]	ARCS = 0	SB28 = 0.6
	[ARCS_××_60] + [SB28_60_C]	ARCS = 4.9	SB28 = 0
	[ARCS_××_100] + [SB28_100]	ARCS = 0	SB28 = 0.5
	[ARCS_××_100] + [SB28_100_C]	ARCS = 5.0	SB28 = 0
ARCS II + SB28	[ARCS_II] + [SB28_60]	ARCS II = 0	SB28 = 2.6
	[ARCS_II] + [SB28_60_C]	ARCS II = 2.9	SB28 = 0
ARCS WIDE/FOCUS +SB18m	[ARCS_WIFO] or [ARCS_WIFO_FI] + [SB18_60]	ARCS WIDE/FOCUS =1.7	SB18m=0
	[ARCS_WIFO] or [ARCS_WIFO_FI] + [SB18_60_C]	ARCS WIDE/FOCUS =7.2	SB18m=0

8.3 Coaxial loudspeaker enclosures

Combination PART 1/2	**Presets**	**Pre-alignment delay values** (ms)	
115XTHIQ + SB118	[HIQ_FI_100] + [SB118_100]	HiQ = 2.6	SB118 = 0
	[HIQ_FR_100] + [SB118_100]	HiQ = 2.6	SB118 = 0
	[HIQ_MO_100] + [SB118_100]	HiQ = 2.5	SB118 = 0
115HIQ + SB18	[HIQ_FI_100] + [SB18_100]	HiQ = 2.3	SB18 = 0
	[HIQ_FR_100] + [SB18_100]	HiQ = 2.3	SB18 = 0
	[HIQ_MO_100] + [SB18_100]	HiQ = 2.2	SB18 = 0
115HIQ + dV-SUB	[HIQ_FI_100] + [dV-S_100]	HiQ = 0.6	dV-SUB = 0
	[HIQ_FR_100] + [dV-S_100]	HiQ = 0.6	dV-SUB = 0
	[HIQ_MO_100] + [dV-S_100]	HiQ = 0.5	dV-SUB = 0
Active 12XT + SB118	[12XTA_FI_100] + [SB118_100]	12XTA = 2.6	SB118 = 0
	[12XTA_FR_100] + [SB118_100]	12XTA = 2.6	SB118 = 0
	[12XTA_MO_100] + [SB118_100]	12XTA = 2.5	SB118 = 0
Active 12XT + SB18	[12XTA_FI_100] + [SB18_100]	12XTA = 2.3	SB18 = 0
	[12XTA_FR_100] + [SB18_100]	12XTA = 2.3	SB18 = 0
	[12XTA_MO_100] + [SB18_100]	12XTA = 2.2	SB18 = 0
Passive 12XT + SB118	[12XTP_FI_100] + [SB118_100]	12XTP = 2.4	SB118 = 0
	[12XTP_FR_100] + [SB118_100]	12XTP = 2.4	SB118 = 0
	[12XTP_MO_100] + [SB118_100]	12XTP = 2.4	SB118 = 0
Passive 12XT + SB18	[12XTP_FI_100] + [SB18_100]	12XTP = 2.1	SB18 = 0
	[12XTP_FR_100] + [SB18_100]	12XTP = 2.1	SB18 = 0
	[12XTP_MO_100] + [SB18_100]	12XTP = 2.1	SB18 = 0
8XT + SB118	[8XT_FI_100] + [SB118_100]	8XT = 3.1	SB118 = 0
	[8XT_FR_100] + [SB118_100]	8XT = 3.2	SB118 = 0
	[8XT_MO_100] + [SB118_100]	8XT = 3.0	SB118 = 0
8XT + SB18	[8XT_FI_100] + [SB18_100]	8XT = 2.8	SB18 = 0
	[8XT_FR_100] + [SB18_100]	8XT = 2.9	SB18 = 0
	[8XT_MO_100] + [SB18_100]	8XT = 2.7	SB18 = 0
5XT + SB15m	[5XT] + [SB15_100]	5XT = 0.3	SB15 = 0

Combination PART 2/2	**Presets**	**Pre-alignment delay values** (ms)	
115XT +SB118	[115XT_FI_100] + [SB118_100]	115XT = 2.6	SB118 = 0
	[115XT_FR_100] + [SB118_100]	115XT = 2.5	SB118 = 0
	[115XT_MO_100] + [SB118_100]	115XT = 2.9	SB118 = 0
115XT +SB18	[115XT_FI_100] + [SB18_100]	115XT = 2.3	SB18 = 0
	[115XT_FR_100] + [SB18_100]	115XT = 2.2	SB18 = 0
	[115XT_MO_100] + [SB18_100]	115XT = 2.6	SB18 = 0
Active MTD115 + SB118	[115bA_FI_100] + [SB118_100]	115bA = 2.4	SB118 = 0
	[115bA_FR_100] + [SB118_100]	115bA = 2.5	SB118 = 0
	[115bA_MO_100] + [SB118_100]	115bA = 2.7	SB118 = 0
Active MTD115 +SB18	[115bA_FI_100] + [SB18_100]	115bA = 2.1	SB18 = 0
	[115bA_FR_100] + [SB18_100]	115bA = 2.	SB18 = 0
	[115bA_MO_100] + [SB18_100]	115bA = 2.4	SB18 = 0
Passive MTD115 + SB118	[115bP_FI_100] + [SB118_100]	115bP = 2.1	SB118 = 0
	[115bP_FR_100] + [SB118_100]	115bP = 2.2	SB118 = 0
	[115bP_MO_100] + [SB118_100]	115bP = 2.8	SB118 = 0
Passive MTD115 + SB18	[115bP_FI_100] + [SB18_100]	115bP = 1.8	SB18 = 0
	[115bP_FR_100] + [SB18_100]	115bP = 1.9	SB18 = 0
	[115bP_MO_100] + [SB18_100]	115bP = 2.5	SB18 = 0
112XT + SB118	[112XT_FI_100] + [SB118_100]	112XT = 2.3	SB118 = 0
	[112XT_FR_100] + [SB118_100]	112XT = 2.3	SB118 = 0
	[112XT_MO_100] + [SB118_100]	112XT = 2.6	SB118 = 0
112XT + SB18	[112XT_FI_100] + [SB18_100]	112XT = 2	SB18 = 0
	[112XT_FR_100] + [SB18_100]	112XT = 2	SB18 = 0
	[112XT_MO_100] + [SB18_100]	112XT = 2.3	SB18 = 0
MTD112b + SB118	[112b_FI_100] + [SB118_100]	112b = 2.4	SB118 = 0
	[112b_FR_100] + [SB118_100]	112b = 2.5	SB118 = 0
	[112b_MO_100] + [SB118_100]	112b = 3.0	SB118 = 0
MTD112b + SB18	[112b_FI_100] + [SB18_100]	112b = 2.1	SB18 = 0
	[112b_FR_100] + [SB18_100]	112b = 2.2	SB18 = 0
	[112b_MO_100] + [SB18_100]	112b = 2.7	SB18 = 0
MTD108a + SB118	[108a_FI_100] + [SB118_100]	108a = 3.5	SB118 = 0
	[108a_FR_100] + [SB118_100]	108a = 3.6	SB118 = 0
	[108a_MO_100] + [SB118_100]	108a = 4.0	SB118 = 0
MTD108a + SB18	[108a_FI_100] + [SB18_100]	108a = 3.2	SB18 = 0
	[108a_FR_100] + [SB18_100]	108a = 3.3	SB18 = 0
	[108a_MO_100] + [SB18_100]	108a = 3.7	SB18 = 0

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